

POWDER RIVER BASIN COAL BED METHANE RESOURCE ASSESSMENT PROJECT: A STATUS REPORT

Dwain McGarry, Karl S. Osvald, and Cathy Stilwell¹

ABSTRACT

Increases in coal bed methane exploration and production pose resource assessment and reservoir characterization challenges for development of coal bed methane (CBM) resources in the Powder River Basin. The relative ease and low cost of drilling sometimes obscures the overarching idea that coal bed methane is an inherent outcome of the particular geology and geohydrology of the "resource". As with other oil and gas plays, a better understanding of the nature of occurrence, magnitude, quality, and distribution of CBM continue to be an essential goal for charting successful and efficient development—particularly the determination of accurate gas in place values and their basin-wide distribution.

It is widely acknowledged that CBM resource analyses conducted during earlier exploration in the Powder River Basin utilized gas content analysis procedures now known to have been technically incorrect. As a result, gas in place estimates based on these values are inadequate for reserve calculations and other resource development purposes. A cost effective collaborative effort between the BLM, USGS, and industry is yielding the first significant publicly available datasets to characterize these values for the Powder River Basin CBM play.

The BLM's Wyoming Reservoir Management Group and U.S. Geological Survey Central Region Energy Team are collaborating in an analysis of the Fort Union Formation coal bed methane resources. The primary goals of the project are to determine the origin, nature and distribution of the CBM resource, obtain more reliable gas in place estimates, and characterize the nature, properties and performance of the reservoirs for resource development purposes. Coal cores provided by participating operators comprise the principal data source for gas content analysis. BLM and USGS collect cores for the entire drilled coal seam, which are placed in sealed canisters for on-site gas desorption analysis. A brief (19 minute) video will be shown which documents the core collection and analytical procedures.

The BLM - USGS - Industry cooperative project was initiated in January 1999. Cores have been collected from four wells to date. Gas desorption has been completed in two of the complete cores. The desorbed core samples have been sent to USGS specialists for macroscopic and microscopic petrology and facies analysis. Additional samples have been sent to USGS contract laboratories for adsorption analysis and proximate and ultimate analysis. The gas content and analytical data are currently proprietary under agreements between USGS and the participating operators, but will be released to the public as soon as allowable. Additional coring is planned and other operators are invited to participate. BLM will use the information obtained from this study to support resource management

¹Wyoming Reservoir Management Group
U.S. Department of the Interior, Bureau of Land Management
Casper, Wyoming

decisions. The final product of the cooperative study will be a USGS resource assessment of coal bed methane resources in the Powder River Basin, published on CD-ROM.

Greater progress must be made in understanding coal bed reservoirs as dynamic litho-stratigraphic systems rather than a homogenous static container which has been the case in the past. More data is needed. There is a compelling requirement for better understanding of potential reservoir characteristics—especially those that benefit from improved in-situ measurements of CBM. Current coal bed methane development projects present important opportunities for partnership and collaboration between industry, the state, academia and the federal government to advance science, technology, and resource management through the sharing of technical information and data.